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ANNUAL REPORT
OF THE
BOARD OF TRUSTEES
OF THE
FARMERS' HIGH SCHOOL
OF
PENNSYLVANIA, FOR 1857.

[Three thousand copies ordered to be printed by the H. R., February 1, 1858.]

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TO THE

MEMBERS OF THE

OF

THE BOARD OF DIRECTORS

AND THE STOCKHOLDERS

OF THE COMPANY

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REPORT.

To the Senate and House of Representatives of the Commonwealth of Pennsylvania:

The interest which the people of our State have in the establishment of the "Farmers' High School," as manifested by the generous aid bestowed upon it by their representatives, renders it imperative that they should be kept informed of its progress and operations. The periodical meeting of your honorable bodies is a fit time and an appropriate occasion on which to impart this information, and although there be no legal requisition upon the Board of Trustees to make any such annual report to the Legislature, yet the success of the institution, necessarily dependent upon public approbation, suggests this mode of keeping our people advised of its workings and its value.

In this, the first annual report of the Board of Trustees of the Farmers' High School of Pennsylvania, it is designed succinctly to detail its beginning and progress to the present time, with the hope, that at each returning period of your meeting, this example may be followed, and thus your constituents and ours will have an opportunity to know how much value is to be attached to a knowledge of agriculture scientifically taught.

It will be remembered that Gen. James Irvin donated to the institution two hundred acres of limestone land of first-rate quality, with the privilege of purchasing two hundred acres more adjoining it, at any time within five years. The Board of Trustees deemed it expedient to consummate this purchase within the past year, so that now the legal title to the whole four hundred acres is fully vested in the institution, subject to the payment of eleven thousand dollars within the five years originally contemplated. Sufficient pains have been taken to know that the title to this land is perfect. The pecuniary means which the board has had, and which they expect to realize, are as follows:

Contributed by the citizens of Centre county, as an inducement for the present location of the institution.	\$10,000
By the Pennsylvania State Agricultural Society.	10,000
By the Legislature at its last session.	25,000
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	45,000

With these funds the board, under the immediate direction of their committee, proceeded first to the erection of such buildings as were absolutely necessary to the enjoyment of the property, and to laying out the grounds and planting as extensively as practicable, preparatory to the commencement of a course of instruction. A convenient farm-house, a large barn, corn-cribs, wagon-sheds and other necessary out-buildings have been completed; an edifice two hundred and thirty-three feet in front and five stories high, with wings at either end, built of limestone, is in a state of forwardness, and will be com-

pleted during the ensuing summer, at a cost of fifty-five thousand dollars. This building is adapted to the accommodation of at least two professors, with their families, and three hundred students. The board had anticipated that such progress would have been made in this building, as to have enabled them to receive a few students in the ensuing spring, but in this they have been disappointed, the season having so advanced as to preclude the hope of getting any part of it under roof this season. It has been deemed better to proceed slowly and certainly, as a measure of economy and prudence, rather than involve the institution in an expensive employment of professors and teachers before their services could be made efficient and useful. It has been found that time is essential to the preparation of the farm for that profitable instruction in practical agriculture which it is the design of the institution to impart. The resources for the further preparation of the farm and completion of the buildings, the receipt of which we anticipate in the coming year, are:

A legacy under the will of Mr. Cresson.....	\$5,000
The appropriation made by the Legislature at its last session.....	25,000
Which is made payable upon the raising of a like sum, by individual subscription, of.....	25,000
	<hr/>
	55,000
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It may be added, that we have such assurances that the individual subscription will be made, as to leave no doubt that our anticipations will be fully realized.

We cannot close this report without an acknowledgment of the valuable services which have been rendered by Professor William G. Waring, to whom has been committed the whole subject of making the necessary preparations for the future operations of the institution. His report, giving a detailed account of all that has been done, and what it is proposed to do, is hereto annexed, and to which is added a proposed course of study, which will afford a just idea of the character and nature of the institution itself. An accurate account of the receipts and payments has been rendered to the president of the State Agricultural Society, in obedience to the requisitions of our charter. This will also, in due course, through that officer, reach the Legislature, for their further information.

By order of the Board of Trustees.

FRED'K WATTS,

Pres't of Board of Trustees of Far. High School of Penn.

JANUARY, 1858.

HON. FREDERICK WATTS, *President of the Board of Trustees of the Farmers' High School of Pennsylvania:*

I have the honor of submitting the following report of operations on the school farm during the past year:

The barn west of the farm house was finished late in 1856. In January and February, 1857, arrangements were made, and stocks prepared for the nursery plantations, and at the opening of spring Mr. John Herman moved into one of the shanties; implements were purchased; six mules, three horses

and a cart were hired, and on the 31st March, the ground thawed sufficiently to enable us to commence work in the orchard and corn ground. Accounts have been kept of the details of all work done, and time occupied; and during the season, a system of record has been arranged, which is now fully developed. A set of books has just been received, ruled to the plan, and consisting of a farm record, a horticultural record, diaries and time-books, field-books and registers for the nurseries, orchards and gardens; and day-book, journal and ledger for debtor and creditor accounts. Every one who is paid for service on the farm, renders a daily account of every hour of time, and this is entered in the diary, and posted into the record in a classified form, which shows, by simple addition at the end of every month, a summary of every item of operations. The record will also contain annual maps of the farm, showing the cropping, manuring, fencing, and all improvements on the surface, as they are accomplished; and its pages will afford a full analytical history of all the operations from the first occupancy of the land, with the objects and reasons of the proceedings detailed. The ledger will receive the balances of receipts, dues and outlay, from all the other books, and from the annual accounts of the treasurer of the board, and will then afford, at any time, a complete statement of the pecuniary condition of the institution, and of the profit and loss in each department, and of each object of culture.

The books having been received but quite lately, and many accounts having passed into the treasurer's care, without any entry here, I have not the means now of stating the proportion of expenditures, in the different departments, with exactness.

The following table shows the number of hours of time expended on the work named in the different months. By cutting off the last figure, the time appears in days and hours of ten hours, and by adding a cipher, the value of the time appears in cents, at ten cents per hour, which is but little below the average true value. Many items of care and time, connected with accounts, correspondence, visits, contributions and reports, were omitted in the imperfect diary notes kept at first. Horse hire and feed; cost of implements, stock and materials, and part of the mechanics' work, will be posted from the bills now in the treasurer's hands, when they can be returned from the auditing committee.

SUMMARY of work done on the High School farm, in hours, for each month from March 31, to December 18, 1857, exclusive only of the work on the College buildings, (A.)

	April..	May....	June...	July...	August,	Sept'r.	Oct'r...	Nov'r..	Dec'r..		
<i>Farm—Ploughing & Harrowing.</i>											
Spear grass sod for corn, 30 acres, (B).....	240	104	.....	.....	.....	.....	.....	.....	.....	344	
Clover sod for corn, 40 acres....	231	125	.....	.....	.....	.....	.....	.....	.....	355	
Wild sod for...do...5...do.....	70	.....	.....	.....	.....	.....	.....	.....	70	
Harrowing corn ground, 75 acres,	3	345	.....	.....	.....	.....	.....	.....	.....	348	
Plowing clover sod fallows for wheat	123	174	68	.....	.....	.....	.....	365	
Harrowing same, (28 acres, new ground)	121	.....	.....	.....	121	
Stirring same (with young mules training).....	26	265	.....	.....	.....	291	
Plowing wheat stubbles for rye and clover, (29 acres, rough)..	202	46	.....	.....	248	
										2,142	
<i>Experimental.</i>											
Plowing ground for rutabagas and buckwheat, 1½ acres, (C.).....	20	.....	.....	.....	.....	.....	.....	20
<i>Horticultural.</i>											
Plowing and harrowing nursery ground.....	95	.....	.....	.....	.....	95	
Plowing sod for vegetables, trees and seed beds in 1858.....	32	45	.....	.....	77	
Harrowing same.....	18	.....	.....	18	
										190	
<i>Farm—Manuring.</i>											
Sowing plaster on 132 acres.....	65	.....	.....	.....	.....	.....	.....	.....	.....	65	
Hauling plaster for corn.....	18	.....	.....	.....	.....	.....	.....	18	
Plastering corn.....	189	.....	.....	.....	.....	.....	.....	189	
Scattering ashes from brush hearths.....	1	.....	.....	.....	.....	.....	.....	1	
Composting manure in yard with soil to be removed (D).....	83	.....	5	.....	.....	.....	.....	88	
Spreading manure in yard and plastering.....	2	.....	.....	2	
										363	
<i>Horticultural.</i>											
Applying fresh barn manure to garden rows, (first made here)..	2	.....	.....	.....	.....	.....	.....	2	
Strewing ashes round orchard trees and on weak parts of hedge rows, (E).....	30	13	.....	.....	.....	8	.....	.....	51	
Strewing ashes from kilns on part of vineyard.....	10	.....	.....	.....	.....	.....	.....	10	
Applying guano to strawberry beds	1	.....	1	
											64

	April...	May...	June...	July...	August,	Sept'r..	Oct'r...	Nov'r..	Dec'r...		
<i>Experimental.</i>											
Applying guano, wood ashes, potash, salt, stable manure and leaf mould to potatoes, (F)....	...	...	3	...	...	...	...	...	...	3	
Hauling coal dust for sewer compost.....	...	...	...	...	3	...	...	...	...	3	
Applying equal values of guano, plaster, crude potash, muriate of ammonia, salt and wood ashes, to parallel rows of corn with unmanured rows intervening.....	...	...	8	...	...	...	...	...	...	8	
Applied guano to various plants..	...	8	...	...	...	...	...	...	...	8	
Carted waste lime to part of garden ground.....	...	...	...	...	...	...	9	...	...	9	
											31
<i>Farm—Seeding and Planting.</i>											
Sowing clover seed on 35 acres wheat.....	20	...	...	...	...	...	...	...	...	20	
Procuring and preparing seed corn.....	18	10	...	...	...	...	...	...	...	28	
Planting corn, 75 acres, (commenced May 12).....	...	430	...	...	...	...	...	...	...	430	
Sowing clover seed in 25 acres of corn, (took well).....	...	...	18	...	...	...	...	...	...	18	
Sowing rye, 29 acres, and harrowing three times.....	...	...	...	...	...	24	100	...	...	124	
Sowing wheat, 28 acres, and harrowing twice.....	...	...	...	...	...	52	...	...	...	52	
											672
<i>Horticultural.</i>											
Planting in orchards, filling up and completing.....	75	40	...	...	...	...	...	...	...	115	
Laying out and planting in vineyard.....	80	12	...	...	...	...	...	...	...	92	
Laying out nursery ground, and planting 43,000 stocks.....	570	262	...	...	...	...	...	...	...	862	
Preparing and planting hedge rows round orchards, gardens, and exposed lines.....	...	126	...	...	...	...	...	...	...	126	
Planting for shelter.....	...	20	...	...	...	...	...	...	...	20	
Seed beds of annual and biennial flowers.....	...	10	...	...	...	...	...	...	...	10	
Sowing seeds of herbaceous plants.....	...	...	...	8	...	...	...	...	...	8	
Troughing and seeding nursery avenues.....	...	...	...	...	...	20	...	...	...	20	
Planting tree seeds.....	...	...	...	...	...	...	...	2	...	2	
Making fall inventory orchards and vineyard.....	...	...	...	...	...	...	24	...	25	49	
Selecting, digging and laying in stocks for vineyard.....	...	...	...	...	...	...	...	27	10	37	
Selecting, digging and laying in stocks for nursery, (I).....	...	...	...	...	...	...	...	35	...	35	
Selecting, digging and laying in stocks for arboretum and farm lines.....	...	...	...	...	...	...	...	...	50	50	
											1,426

	April..	May....	June...	July....	August,	Sept'r..	Oct'r...	Nov'r..	Dec'r...	
<i>Experimental.</i>										
Sowing Hungarian Spring wheat, (did not ripen).....	5	.....	.....	.....	.....	.....	.....	.....	.....	5
Sowing Nepaul barley, $\frac{1}{2}$ gill; Poland oats, 20 qts.; Potato oats, 1 qt., (all yielded well).....	10	.....	.....	.....	.....	.....	.....	.....	.....	10
Planted Chinese sugar cane, ($\frac{1}{2}$ acre,) (G).....	8	.....	.....	.....	.....	.....	.....	.....	8
Planted sugar beets, kohlrabi and mangel werzel, (2 rows grew very large and fine).....	5	.....	.....	.....	.....	.....	.....	.....	5
Planted rare sorts potatoes, (one very valuable,) (H).....	13	.....	.....	.....	.....	.....	.....	.....	13
Planted rutabaga in beds and transplanting afterwards, (interfered with the corn culture, and was not profitable)..	40	88	.....	.....	.....	.....	.....	128
Setting out sugar beets and kohlrabi.....	3	.....	.....	.....	.....	.....	3
Sowing grass seeds of several sorts in trial patches.....	10	.....	.....	.....	.....	10
<i>Farm—Cultivating.</i>										
Cultivating corn, (75 acres).....	319	330	.....	.....	.....	.....	.....	649
<i>Horticultural.</i>										
Cultivating hedge rows (906 rods).....	80	43	28	15	.....	.....	.....	.....	.....	166
Do.....nursery, (5 acres).....	176	124	38	53	.....	.....	.....	.....	391
Do.....orchards, (26 acres)..	7	22	6	10	.....	.....	.....	.....	45
Do.....vineyard, ($1\frac{1}{2}$ acres)..	78	30	34	.....	.....	.....	.....	.....	142
Do.....garden plants, (rhubarb, asparagus, berries, dwarfs, &c., $\frac{3}{4}$ acre).....	2	37	7	.....	.....	.....	.....	.....	46
Cultivating field beets, rutabaga, potatoes, &c.....	5	.....	51	.....	.....	.....	.....	.....	56
Cultivating seed beds, ($\frac{1}{2}$ acre)..	32	.....	.....	.....	.....	.....	32
Hoeing orchard trees, and mulching with clover and sprouts...	22	86	.....	.....	.....	.....	.....	108
<i>Farm—Harvesting.</i>										
Arranging hoisting fork, preparing scythes, &c.....	8	.....	.....	.....	.....	.....	.....	} 348
Mowing clover.....	215	.....	.....	.....	.....	.....	.....
Hauling in hay, (25 tons).....	125	.....	.....	.....	.....	.....	.....
Cutting wheat, (25 acres,) part on shares, (J.).....	106	170	.....	.....	.....	.....	.....	276
Cutting barley and oats.....	12	.....	.....	.....	.....	.....	12
Cutting off corn and shocking up, (24 acres).....	231	252	.....	.....	.....	483
Husking corn, (75 acres—24 acres in shock).....	113	1486	252	1,851	
Hauling in corn.....	42	570	145	757	
Hauling shocks into barn floor..	103	.....	103	
Cutting and taking in clover seed, (27 acres).....	65	.....	117	182	
										4,012

	April...	May....	June...	July....	August,	Sept'r..	Oct'r...	Nov'r..	Dec'r..		
<i>Farm—Feeding.</i>											
Sixteen young cattle, purchased in November.....	17	32	49	
Setting up corn mill and grinding,.....	9	9	58
<i>Farm—Clearing and Improving.</i>											
Carting stones from corn ground, &c.....	140	192	.....	.....	.....	.....	.....	.....	.....	332	
Grubbing, picking and burning 286 rods of fence rows.....	152	41	.....	.....	.....	.....	.....	.....	.....	193	
Grubbing fallow ground, (23½ acres).....	300	506	269	.....	.....	.....	.....	.....	1,075	
Sprouting, picking and burning 29 acres stubble, and 13 acres corn ground for 1858.....	269	400	228	.....	.....	.....	897	
Cleaning barn and stables, cellar, &c.....	30	25	19	13	8	5	2	24	10	136	
Carting stones from fallows.....	265	.....	.....	.....	.....	.....	.....	265	
Moving into the house, (June 29th) (K).....	16	.....	.....	.....	.....	.....	.....	16	
Mowing off toad-flax twice, and cleaning seed wheat.....	8	.....	.....	.....	.....	.....	8	
Training four young mules, (L).....	7	10	.....	.....	.....	.....	17	2,939
<i>School.</i>											
Arranging for convention and election.....	43	.....	.....	.....	.....	.....	43
<i>Horticultural.</i>											
Sprouting orchard ground.....	72	.....	.....	.....	.....	.....	.....	.....	72
<i>Experimental.</i>											
Trying means of arresting insects,.....	15	.....	.....	.....	.....	.....	.....	15
<i>Farm—Away.</i>											
To smith's shop.....	2	5	.....	13	13	.....	33	
To mill for horse feed.....	21	6	6	.....	.....	.....	.....	33	
For wood.....	9	9	.....	18	
Butchering.....	25	.....	.....	25	109
<i>Horticultural.</i>											
To Tyrone station for trees and plants.....	30	.....	30	
Ill.....	10	.....	10	40
<i>School.</i>											
To Bellefonte.....	8	16	18	40	36	21	139	
To Lewistown, for furniture.....	35	10	.....	.....	.....	45	
To Spruce Creek.....	51	.....	.....	.....	51	
Surveying.....	5	31	28	.....	34	.....	98	194

STATEMENT—CONTINUED.

	April...	May....	June....	July....	August,	Sept'r..	Oct'r... ..	Nov'r.. ..	Dec'r.. ..		
<i>Farm.</i>											
At educational meeting, 10, and election, 20, and to court as a juror, 50.....	.....	.....	.....	.....	.....	.....	.....	80	.....	80	
Funeral H. Herman, Sr., Aug. Mary J. Herman, Sept.....	.....	.....	.....	.....	50	40	3	.....	.....	93	437
<i>Horticultural—Pruning, Training and Grafting.</i>											
Nursery stocks.....	52	.....	.....	.....	.....	.....	.....	.....	.....	52	
Pruning in peach orchard.....	.....	.....	10	.....	.....	.....	.....	.....	.....	10	
Do....hedges.....	.....	40	.....	.....	35	13	7	.....	.....	95	
Cutting and hauling vineyard stakes.....	.....	.....	.....	.....	.....	.....	.....	13	.....	13	
Grafting in orchards.....	30	.....	.....	.....	.....	16	.....	.....	.....	46	
Budding fruit tree stocks, (about 28,000) (M).....	.....	.....	.....	.....	462	218	62	.....	.....	742	953
<i>Farm Fence—Fences, Roads and Buildings.</i>											
Repairing and adjusting fences..	33	63	.....	.....	1	43	12	.....	5	157	
Making post and rail fence along new road.....	.....	.....	104	.....	.....	.....	272	75	...	451	
Hauling rails for fence.....	.....	.....	.....	.....	.....	73	17	.....	.....	90	
Making fence round barn-yard...	.....	.....	.....	.....	.....	90	.....	.....	.....	90	788
<i>Farm Roads.</i>											
Opening and mending farm roads,	30	5	.....	.....	.....	.....	.....	.....	.....	35	
Digging out trench in farm lane to receive stone, and to make compost, (N).....	.....	.....	.....	.....	.....	.....	4	.....	.....	4	
Grading and stoning round buildings, (O).....	.....	16	.....	.....	.....	.....	86	23	.....	125	161
<i>Farm Buildings.</i>											
Work at cisterns.....	40	.....	47	.....	185	563	.....	.....	.....	835	
Setting pump.....	.....	.....	10	.....	.....	.....	8	.....	.....	18	
Hauling brick, cement and sand for cisterns.....	.....	.....	.....	.....	40	30	.....	.....	.....	70	
Adjusting pipe and inlet at upper cistern.....	.....	.....	.....	.....	.....	.....	.....	69	.....	69	
Building privy, with self-operating compost arrangements...	.....	.....	215	.....	.....	.....	.....	.....	.....	215	
Hauling brick for oven and building it.....	.....	.....	10	20	31	.....	.....	.....	.....	61	
Hauling lumber from Bald Eagle,	.....	.....	.....	.....	.....	.....	.....	113	.....	113	
Making and arranging stalls for cattle and horses.....	.....	.....	.....	.....	.....	.....	.....	.....	56	56	1,437
<i>Horticultural.</i>											
Digging out propagating pit....	.....	.....	.....	.....	.....	.....	.....	.....	66	.....	66

STATEMENT—CONTINUED.

	April...	May....	June....	July...	August,	Sept'r..	Oct'r...	Nov'r..	Dec'r...		
<i>Farm—Shop and Office.</i>											
Making and repairing corn harrows, plaster and guano dropping attachment, shovel plows, desk, wagon ladders, wooden cane mill, (worn out) &c.....	.....	5	107	37	13	4	16	19	27	228	
Repairing and oiling harness.....	.....	.....	.....	.....	.....	.....	40	.....	.....	40	
Preparing plans and sections for tool room, shop, meat room, slaughter room, hog pens, germinating pit, boiler, &c.....	.....	.....	.....	.....	.....	.....	.....	37	19	56	
Making estimates for accommodation and feeding of stock, and making manure.....	.....	.....	.....	30	.....	.....	.....	.....	.....	30	
Making out and settling accounts for husking, &c.....	.....	.....	.....	.....	.....	.....	.....	.....	20	20	
Work on cribs and stable partitions.....	.....	.....	.....	.....	.....	.....	95	.....	.....	95	
											469
<i>Horticultural.</i>											
Grafting for nurseries.....	52	.....	.....	.....	.....	.....	.....	.....	.....	52	
Fitting up tool rack, &c.....	.....	15	.....	.....	.....	.....	.....	.....	.....	15	
Making stakes, labels, index boards, &c.....	.....	.....	.....	20	6	.....	.....	.....	.....	26	
Arranging for budding, selecting and adjusting sorts and proportions.....	.....	.....	10	37	5	.....	.....	.....	.....	52	
											145
Writing letters, reports, &c.....	3	5	15	7	6	10	14	22	19	101	
Measuring work and material at college buildings; drafting flue sections; estimating, (P).....	.....	.....	.....	.....	.....	27	102	17	.....	56	
Acknowledgments of donations received, (Q).....	.....	.....	.....	15	.....	.....	.....	.....	.....	15	
											172
<i>Number of Persons Employed.</i>											
At \$1,000 per annum, with board, 3 previous months.....	1	1	1	1	1	1	1	1	1	38 $\frac{3}{4}$	} mos. or 1015 days
At \$10 per month, and house....	1	1	1	1	1	1	1	1	1	52 $\frac{1}{4}$	
At \$14 per month, and board=\$24.....	.....	.....	.....	.....	.....	2	2	2	.....	845 $\frac{3}{4}$	
At \$12 50 per month, and board=\$22 50.....	2	2 $\frac{3}{4}$	3	2	2	.....	.....	1	2	189	
At \$1 87 $\frac{1}{2}$ per day, (mechanics).....	.....	.....	24	17	.....	.....	1 $\frac{3}{4}$	.....	.....	31 $\frac{1}{4}$	
At 1 25....do....(budding).....	.....	.....	.....	.....	33 $\frac{1}{4}$	19	.....	.....	.....	2,176	
At 1 00....do.....	87	110 $\frac{1}{4}$	70 $\frac{3}{4}$	80	133 $\frac{3}{4}$	162 $\frac{1}{2}$	133 $\frac{1}{4}$	46 $\frac{3}{4}$	21 $\frac{1}{2}$		
At 87 $\frac{1}{2}$....do.....	.....	.....	.....	.....	.....	.....	.....	137	52		
At 75....do.....	.....	.....	.....	.....	.....	8 $\frac{1}{2}$	.....	20	7 $\frac{3}{4}$		

(B.) During the months of January, February and March, a cistern excavation was made at the farm house; implements, nursery stocks, &c., were procured, and the work of improving the farm arranged. Many contributions of seeds, plants, books, &c., were received.

Throughout April, and until May 11th, the ground was in a very wet, impracticable condition; and as it had been impossible to prepare the nursery grounds during the previous season, that planting was done under great difficulty and disadvantages. Corn planting was commenced on the 11th of May, and that was the first day of the season on which the ground had been dry enough even to plow. On the 19th, heavy, cold rains fell again; a few days near the end of May were pleasant, but the early part of June was very cool, and the oak leaves were frozen in some low, dry vales. On the 10th, a heavy three days' rain set in, followed by showery weather till the 25th, when the ground became for the first time in good condition for working, even on the perfectly drained soil of the school farm. Frequent showers followed, and corn tassels did not appear until late in July.

(C.) This was ground intended for nursery planting, but the stocks for which did not arrive.

(D.) There were no cattle in the yard to pack the manure, and some clay of excavation was used to prevent its burning up.

(E.) The orcharding has been the butt of accidents and misfortunes. A clumsy hand destroyed a large number of trees, grafted at the ground, by dropping the ashes *on* the grafts instead of *around* them, as strictly directed. Grasshoppers have been so numerous on parts of the ground for two years, as to eat the very bark, after first devouring every leaf. The clean mulched surface around the trees attracted them in hosts, and the low, branchy trees themselves served for roosts. Nothing was found to repel them. The most nauseous drugs and weeds mixed with rye flour and dusted on in the dew, only seemed to impart relish, and stimulate their voracity. The ground is part of the corn allotment for next season, and where not too rooty to use the double plow, it is hoped that an early plowing with it may bury the eggs too deep for resurrection. Field mice were very numerous, but were checked by banking up and by the use of poison, but they devoured the roots of some valuable trees. Besides these injuries, a part of the peach trees and grape vines to which guano had been applied early in 1856, made no growth for want of rain until the last of September, when copious rains started an extremely luxuriant, untimely growth, which was utterly frozen during the succeeding severe winter. A portion of the hedging suffered from the same cause. Trees are selected and stored to fill the vacancies, and a supply of most of the finest, hardy fruits can be confidently expected within three or four years, if the trees are allowed to branch *low*, as intended and now formed. The growth, where not interfered with, is excellent.

(F.) No minute experiments can be made in the midst of rude necessities and cares devolving upon one person. A few trials have been instituted towards determining the most economical manures, processes, and crops adapted for the soil of the school farm. Some results of importance have been developed by these slight trials. As to the manures tried, plaster, humus, ashes and yard manure proved most effective.

It is to be hoped that the department of "Experiment" can soon be committed to a competent, practical savant, whose attention will be undividedly devoted to it; and that, under one intelligent and acute superintendence, an association of systematic experiment may be instituted in all the variety of soils and circumstances of the various counties of the State. This will secure a desideratum never yet attained, and will rapidly determine positive results which every farmer can at once act upon, and profit by, with certainty.

(G.) The seed of *Sorghum Saccharatum* was planted late in May, in a soil rather deficient in mould, the surface being destitute of it, and consisting wholly of the raw, unoxygenated subsoil, brought to the surface by the double Michigan plow. It grew even slower than usual at first, on this account, and was very late. None of the seed ripened, but some in the vicinity planted late, in vegetable mould, ripened well. 850 average canes, the produce of 200 hills, weighed 727 lbs.=85 lbs. each=18,600 lbs. per acre. One hand stripped the canes while standing in the field in 105 minutes, and another cut them in the same time at the ordinary rate of exertion. It was hauled to the mill, 400 yards distant, in 70 minutes; passed through a wooden mill three times in 300 minutes, (2 hands;) yielded 28 gallons of juice, which made 4 gallons of thick syrup=103 gallons per acre. An iron mill is requisite for the crushing; the rest of the process of making syrup is quite simple. There seems to be no probability that sugar can be made profitably in this climate from the Sorghum.

(H.) One of the varieties of *potatoes* possesses extraordinary merit, and will be a special subject of care and culture next season. The institution possesses about three bushels of the seed. The rutabagas grew well—two of the kinds had very handsome and perfect bulbs. This root may prove a very suitable and useful subject of culture after the farm is brought into high condition, and when cultivated by student workers. This season it interfered with duty to other crops, corn especially, and did not prove profitable. The field beets were much less troublesome, and yielded very largely.

(I.) A large collection of trees and shrubs is now set out in reserve for the arboretum, and many nursery plants will be of saleable growth in another season. A catalogue of the nursery will be prepared, and also of the arboretum. The latter will inform botanists and tree growers what we have, and what we need; and exchanges may be made in many cases with mutual advantage and at little expense. Among the numerous contributors of plants, trees and seeds, whose generous favors have greatly enriched the nurseries and vineyard, I must especially mention the names of J. B. Garber, Thomas Meehan, George Thorn, Samuel Miller, John Murdock, Dr. J. K. Eshleman, Geo. Bucher, Thomas Evans, Theo. H. Cremer, R. B. Foster, A. Harshbarger, and Dr. Brinckle, of our own State; Charles Downing, Dr. C. W. Grant and Ellwanger, and Barry, of N. Y.; E. Tatnall and Wm. Canby, of Delaware; H. R. Robey, of Virginia; M. B. Bateham, of Ohio; A. G. Hanford, Wisconsin; Charles Schall, California.

Valuable books have been received from Chas. L. Flint and M. P. Wilder, and Hickling, Swan & Brewer, Boston; Prof. J. C. Holmes, Michigan Agricultural College; D. Harris, Ohio; H. A. Dyer, Connecticut; C. Francis, Illinois; D. Appleton & Co., N. Y., and Dr. C. G. Reinhold, James S. Barr and Thos. P. James, of Pennsylvania. Implements have lately been received from several makers, and will require special report after careful trial. Acknowledgments of all donations received have been forwarded twice to the American Agriculturist. A late letter from the editor explains the reasons of delay satisfactorily, and the lists will appear in January. The items and particulars are entered in a special account, in accordance with the direction of the Board of Trustees.

(J.) The wheat crop throughout central Pennsylvania was light. For some weeks after the usual season of seeding, the ground was too dry to admit of the germination of the seed, and much that sprouted withered. Late in the fall there was a season of growth, and although the winter set in severely, a good covering of snow saved the young plants perfectly until the middle of February, when a thaw occurred which surcharged the soil with water. This was very suddenly followed by intense and continued frost, which penetrated

the earth more than two feet, and by its disruptive force, under these circumstances, it entirely destroyed every fruit tree and plant that had been excited into untimely growth by the rains in the last of September. Those wheat plants which retained a relic of root hold, were kept alive by the constant rains of May and June, but ultimately became the prey of rust and weevil.

(K.) Great discomfort and inconvenience were ended by this "move." An open, leaky shanty had been the only shelter admitting the use of a stove, through a remarkably wet, cold spring, and on ground swept by all the breezes of Heaven; yet no one's health suffered. On the contrary, the fresh, pure, dry air is remarkably restorative and invigorating, as proved in numerous cases, and evidenced by activity of movement at the table and in the fields every day.

(L.) Up to the 20th of May, the Board of Trustees were left in uncertainty as to what amount of funds would be placed at their disposal, and they directed that only the most indispensably necessary work should be undertaken. Up to the 27th of July, the work was done wholly with hired teams and implements, and their concomitant disadvantages. The four mules and two horses, now the property of the institution, are all young, very gentle and docile, strong, healthy, handsome and well trained. The arrival of these animals was quite an era, and afforded great impetus and encouragement to the labor.

(M.) The wet, drenching weather, and immature condition of the late spring planted stocks obliged us to delay budding. Having to procure every bud from several miles distance, and to cut them from bearing trees myself, in order to secure correctness, and having not one budder of the least experience in the nursery, I labored in some fear for the result. But under the system adopted, and with the favoring influences of soil and exposure, we set about 28,000 buds, all true to the arrangement, with some slight displacements subsequently corrected, and very nearly all promise well. There are worked in the nursery 47 varieties of summer apples, 41 of autumn apples, 84 of winter apples, all superior sorts; 37 select varieties of pear; 15 of duke cherries; 43 of sweet varieties of cherry; 43 selected plum; 41 of peach and nectarine; 38 of roses; 9 of apricots, and lists of grapes, berries, ornamental trees and shrubs, and herbaceous plants in proportion. Very many new sorts contributed by friends of the institution have been placed in the orchards for bearing and trial. Only kinds of known and distinct merit are admitted into the nursery; very nearly every sort is worked from fruit bearing trees; the sorts of limited value in short rows of two to ten trees each, and the comparatively few kinds that combine the most and greatest excellencies are grown by hundreds and thousands. The soil is perfectly drained, pure and healthful, and the situation elevated and open. The young shoots are stout, short, bright and firm, with well developed buds, and fully ripened to the extremity. The roots of plants dug are numerous, clean, firm and bright.

(N.) The southern part of the farm, and a portion of the north-east part, have been under culture this season, and are greatly improved in surface and condition. The middle portion, north-westward from the buildings, will come next in order, and it includes the roughest, yet perhaps the best portion of the farm. There is a great amount of surface stone on it, and the question where to put them to the greatest advantage, consistent with present means, is one of the most difficult connected with the arrangement of the farm operations of next season. The clearing and improvement of the surface of the farm will absorb labor to a great extent for two or three years, and will delay the finer operations of systematic culture for that length of time.

(O.) The buildings finished and in use are:—One capacious double storied barn, built after plans furnished by Hon. Fredk. Watts, a substantial structure, and much admired for its many advantages of arrangement. A farm-house

now occupied by the family of Mr. John Herman, a handsome cottage of appropriate architectural design, and found very comfortable. It is finished with unplanned, vertical battened, weather-boarding, coated with mineral paint, of a shade corresponding to the chocolate brown of the other farm buildings. It contains on the first floor a parlor, a large, pleasant dining-room, kitchen, buttery, pantry, closet, two entry halls, and three fire hearths; and on the upper floor, five chambers with closets; and has ample cellars. A filtering cistern in the rear is 27 feet deep, and will supply the purest and best of water, perfectly cool in the warmest months. It will contain more than 250 barrels of water, and there are two strongly built cisterns at the barn with a capacity of over 850 barrels of 36 gallons. The water from the upper cistern can be drawn in the stables. The amount of rain falling on the barn, annually, at the average of three feet of depth, is over 3,000 barrels. The well at the lower building, fifty rods south-east of the college site, has an abundant supply of water, but, to avoid hauling, the building contractors propose to pay one-half of the expense of sinking a well between the farm house and the college buildings. This well will be commenced shortly. A double corn crib and wagon shed, 45 feet long and 20 feet wide, was built in September, and finished in the same style as the barn, at a cost of \$350. It has vertical siding on the inner faces of the crib, which incline together at the top, and horizontal siding on the outside. The cribs stand on rat-proof pillars. The roof projects two feet all around. There are 3,300 bushels of corn-ears now in these cribs. The barn contains cribs of nearly the same capacity, also filled.

(The barn cribs are $36 \times 13 \times 4$ feet clear, and the out cribs $45 \times 11 \times 4\frac{1}{2}$. Our sealed half bushel contains 1078 c. inches, being 11.87 mean diam., and 9.75 deep. If heaped with a cone 4.75 in altitude it makes the standard heaped measure full= 2553.6 c. in. The New York bushel is= 2211.84 c. in.=the bulk of 80 lbs. of water at the natural temperature of well or spring. The Winchester= 2150.4 struck and 2553.6 heaped. The common bushel equal to 2193 and 2815 heaped. The English Imperial ten gallon= 2218 c. inches.)

The corn cribs flank the barn yard on the south-west side—a road-way intervening. On the corresponding south-east flank, a building of the same size, external finish and cost, is now being erected, to contain a tool room, carpenter's shop, meat room, seed and lumber loft, and a steam boiler. This building is being put up by Mr. B. M'Clain, who built the barn and corn cribs, and the barn cisterns, all of which are solidly, handsomely and completely finished throughout. The boiler has been received and is now being set. It is intended to test the advantages of cooking feed for cattle and hogs, and is so placed as to steam the feed, scald hogs, cook offal, &c., in wooden vats in the slaughter-room chamber of the hog pen range within the barn yard. The steam will be conveyed subterraneously across the buildings and the road, at an estimated loss of heat of not over two per cent. On the opposite side of itself the boiler will supply heat to a propagating pit by a flow of hot water. Northward from the boiler the steam can be used for purifying cane syrup, or cider, making apple butter, &c.; and within the shop it will supply water and steam for washing, steaming wood, &c., and the spare heat radiated will be contributed to warm the shop. An error in the construction of the boiler, by which the flow pipes are inserted on the wrong side, mars the intended arrangement in some of its fittings of convenience, but will not reduce the effectiveness of the apparatus. The boiler fire-place is nine inches high and thirteen wide, and the grate is thirteen inches long.

(P.) The work on the college buildings has been prosecuted lately with vigor, under the constant and personal direction of the architect, Mr. J. R. Natcher, of Turner & Natcher. The uncertainty which clogged the action

of the trustees last spring, held all operations in suspense until the 20th of May, when the Legislature, with a wise liberality which will be appreciated through all future years, by all who are interested in the success and intelligence of the great basis of society—the cultivators of the earth—placed at the disposal of the trustees the means of carrying forward the indispensable work of erecting suitable buildings. A party of brickmakers and excavators commenced work on the 24th of June, and the first stones were laid in the foundations on the 18th of August. Owing to illness in Mr. Natcher's family, and his consequent absence, the work was impeded for some time, but during the latter part of October, and subsequently, it has been forwarded vigorously. The walls of the west wing are up three stories, and are plainly, but very substantially built, of superior gray limestone. They are four feet thick in the base, and are founded entirely on solid rock. This wing will contain a complete suite of rooms on the first and second floors for a private residence, with front and back separate entry halls; also, four recitation rooms on the first floor, 18×17 ; two rooms on first and second floor, 27×17 ; one society hall on third floor, 37×19 ; sixty-nine chambers on the different floors, (each supplied with warm air by a separate flue,) 17×9 ; five store rooms with roomy passages, 9×5 . On the 30th of November there were, per estimate of that date, 8,810 perches of stone quarried, of which 2,058 perches were laid in wall; 611,940 brick burned, of which 244,816 were laid in wall; 221,000 feet of lumber delivered on the ground and partly worked, and a very large supply of sand, castings, and other materials. Two gangs of quarrymen and six carpenters continue at work through the winter; and the good feeling that prevails—the energy used—and the full preparations now made, give assurance that the contractors will carry out their intentions of resuming work as early as practicable in the spring, with as large a force as can be applied, and that the west wing will be fully completed for occupancy before next November.

(Q.) *Recapitulation of the totals of time, in hours, from the above summary of operations.*

	Farm department.....	Horticultural department...	School department.....	Experimental department...	Total in hours.
Plowing and harrowing.....	2,142	190	.....	20	.....
Manuring.....	363	64	.....	31	.....
Seeding and planting.....	672	1,426	.....	182	.....
Cultivating.....	649	986	.....	.....	.....
Harvesting.....	4,012½	64	.....	85	.....
Threshing.....	299	6	.....	.....	.....
Storing.....	28	144	.....	.....	.....
Feeding.....	58	.....	.....	.....	.....
Clearing and improving.....	2,939	72½	43	15	.....
Away.....	427½	40	194	.....	.....
Pruning, training and grafting..	.....	958	.....	.....	.....
Fences, roads and buildings...	2,389	66	.....	.....	.....
Shop and office work.....	469	145	172	.....	.....
	14,448	4,161	409	333	19,351

(R.) Counting the total of hours in the table on note Q, at an average of ten per diem, which is rather low, they make a total of 21,760 days—2,409 less than the total of days from the time book. In the first diary notes, fragments of time devoted to visitors, &c., was not noted; and many omissions were unavoidable under the circumstances. Hereafter an arranged system will be followed, and balances drawn and compared every month.

Wants.

I. Although the amount of planting next season will be comparatively small, the culture will be proportionately increased, and will require the constant attention of a practiced hand. My own attention is greatly divided, and frequently absorbed by the building operations, accounts, correspondence, &c. This will be much more the case, if the same duties are entrusted to me next season; and in order to secure the economical and correct performance of all the horticultural operations, it will be necessary to engage the services of a steady, intelligent, industrious man, acquainted practically with the processes and conditions of success. This will not increase outlay; on the contrary, it should reduce it, by an acceleration of continually well directed labor.

II. Mr. Herman, under whose immediate supervision all the farm operations have been conducted, estimates the additional force of team necessary next April at two teams; one of which, Mr. Herman recommends, should be an ox-team. We have now three good teams; and if the farmer has a horse working part of the time for his feed, as proposed by Mr. Herman, the cart can be kept going during the early part of the season, while four teams are plowing, and one hauling stone or harrowing. There are eighty-two and one-fourth acres which should be plowed for corn—all rooty and stony—the roughest ground on the farm at present; twenty-five acres should be sowed with barley or oats; two acres for potatoes, &c.; three acres arboretum and nursery; two acres for sugar cane; making one hundred and fourteen and one-fourth acres, which should be plowed before the first of May. There will be fifty acres of fallow for wheat, but it was well cleaned in 1857, and is now almost smooth. The rough fence rows were turned down and buried up so completely with the double plow, as to be almost undistinguishable.

III. Hog-pens should be erected early in the season. It is greatly to be desired that all the corn grown on the farm should be consumed on it, with the offal, &c., and that the resulting manure should be retained and applied in the most perfect condition. The present price of corn offers no inducement for the sale of it; and there is no available source of manure outside of the farm, other than the few dead animals which may possibly be obtained and reduced. If we had suitable pens, we should have respectable tenants placed in some of them by the generosity of individuals who have offered to contribute specimens of favorite breeds.

IV. Weighing scales for exact proportions of manures, &c., and for loads and animals, have often been wanted and will be necessary.

V. Two hundred and four rods of post fence were put up on the back line in 1857, and one hundred and forty rods must be built along the front and part of the new road early in 1858. Some portable fence will be required, making 12,000 feet of stuff wanted in addition to what is here.

VI. Petitions have been forwarded for the establishment of a mail route passing the farm, and it is hoped that this convenience will soon be obtained. At present the nearest post office (Boalsburg) is five miles distant. Two important public roads have lately been laid out, converging at the farm, from the south and north-west.

VII. The very large amount of clearing requisite on the ground allotted for corn next season, and the culture of the orcharding, hedges and nurseries now planted, and of the corn, will require so large a force, that I forbear to mention some desirable improvements, which, although wanted now, can be deferred to a season when the school will be opened, the disturbing interferences of the building operations removed, and a student force organized.

Winter Work in the Shop.

Mr. Herman is familiar with the manufacture of implements, and proposes the following wet weather and winter work for the shop:—making sled for mule team, new harrows, roller, horse hoe for rough corn ground, double shovel plows, plow wheels, portable fence, repair of harness and implements.

An inventory of personal property belonging to the Farmer's High School, and found on the premises December 18, 1857, prepared and corrected by Mr. Herman.

(The articles are enumerated separately. Subsequent inventories and valuations will determine the amount of wear and loss. The wooden implements are branded "F. H. School.")

In the Stables.

1 dun horse, (Charley).....	\$150 00
1 bay brood mare, (Lucy).....	150 00
4 mules, Tom \$190; Coaly \$190; Perry \$160; Beck \$160....	700 00
4 sets harness for mules.....	50 00
1 set tug harness for two horses.....	15 00
15 steers, cost 3½c.....	} 452 10
1 heifer ...do.....	
18 cattle chains, 12 at 62½, 6 at 75.....	12 00
2 manure forks, 1 at \$1, 1 at 75c.....	1 75

In the Barn and Cribs.

170 bushels wheat, (raised by farm, \$1 25).....	212 50
$\frac{2}{5}$ share of fifty acres a 8=160 bushels.....	200 00
$\frac{1}{4}$ share of ten acres for cutting and threshing.....	25 00
5½ doz. new varieties of oats.....	8 00
15 tons clover hay.....	150 00
30 tons straw.....	90 00
40 tons corn fodder, (part out).....	200 00
600 lbs. guano compost, a 2½c.....	16 50
40 tons barn yard manure, (part compost).....	70 00
6352 bushels of corn, 25c.....	1,588 00
30 bushels corn for seed, 37½.....	11 25
1 four mule wagon.....	66 00
1 two horse wagon.....	70 00
1 set ladders for wagon.....	5 00
1 cart.....	35 00
2 metal plows, (Clearfield).....	11 00
2.....do.....(Ohio sod).....	12 00
1 doz. shares for.....do.....	7 50
1 bar-share plow.....	5 00
1 double Michigan.....	13 00
1 subsoiler, steel-soled.....	10 00
1 one horse plow.....	6 00
1 cultivator, with corn coverer.....	6 00

1 cultivator.....	\$5 00
1 horse hoe, with guano dropper.....	6 00
2 square harrows.....	12 00
4 sets double and single trees for plow teams.....	12 00
1 Gourly's clod crusher, donated by J. Winebrenner.....	25 00
1 horse-power thresher and shaker.....	150 00
1 strap for.....do.....do.....	12 00
8 grain forks, 2 at \$1, 6 at 75c.....	5 50
6 grain rakes.....	1 50
2 scoop shovels.....	1 00
1 half bushel measure, 1075 c. in.....	1 00
1 drawing chain.....	2 50
1 axe.....	2 00
1 hatchet.....	50
1 handsaw.	2 00
1 corn and cob mill.....	35 00
1 two horse sled.....	20 00
1 farm sled.....	3 00
2 grass scythes and snathes.....	4 00
2 grain cradles.....	10 00
1 bush scythe.....	1 00
1 hoisting hook and fixtures.....	12 00
12 bags.....	6 00
2 water cans.....	1 50
1 grindstone and fixtures.....	6 00

Stored in Pits and Cellar.

5 bushels superior sorts of potatoes.....	9 00
1½ ..do...inferior...do.....do.....	75
120...do...rutabaga.....	37 50
40...do...sugar beets.....	15 00
Nursery and orchard stocks, dug, assorted and stored.....	100 00
1 strong digging spade.....	1 25
2 canal shovels.....	1 50
1 round edged spade.....	1 00
2 picks.....	2 50
1 grubbing mattock.....	1 50
1 mattock hoe, (sod hoe).....	75
1 prong hoe.....	75
4 hand hoes.....	2 00
1 garden rake.....	1 00
1 reel and line.....	1 00
3 iron dibbers.....	1 50
6 budding knives.....	3 50
1 wheel barrow.....	5 00
1 post digger.....	2 50
8 stone drills.....	8 00
1 steam boiler and attachments.....	80 00
2000 feet white-pine boards.....	28 00
1800 feet fencing rails.....	22 50
30000 stocks set out in nursery rows, one year's growth established, two-thirds budded.....	2,400 00
10000 shrubs, vines, &c., do.....	800 00
Herbaceous plants, seeds, &c.....	100 00
Trees and plants prepared for sale.....	100 00

Book Accounts.

Due nursery, for unpaid bills of trees and plants sold.....	\$64 17
Due school for do., for surveying.....	25 50
Due farm for do., for grain and horse hire.....	24 50

Furniture in Parlor.

2 mahogany sofas.....	56 00
8 cane seat mahogany chairs.....	20 00
1 marble top stand.....	11 00
24 yards of carpeting.....	24 00
2 sets window blinds.....	20 38
1 parlor stove and pipe.....	16 00
1 office. .do. .do.....	9 00
1 office desk.....	5 00

Ware from Harvey Filley, 136 Market street, Phila., viz:

1 waiter.....	1 75
1 tray.....	44
1 castor (plated) and bottles.....	6 00
1 coffee pot, metal.....	} 5 75
1.do. .do.....	
1 bowl.do.....	
1 sugar bowl, do.....	
2 tea pots. . . .do.....	} 3 25
12 knives.....	
12 four prong forks.....	7 50
Carving knife and fork.....	87
1 doz. plain tea spoons.....	2 75
6 table spoons.....	3 25
2 salt spoons.....	50
	<u>8,719 22</u>

All which is respectfully submitted by

WILLIAM G. WARING.

JANUARY 1, 1858.

SUBJECTS PROPOSED TO BE TAUGHT, ARE

Mathematics.—Including practical surveying, leveling, and the care and use of instruments.

Natural Philosophy.—The principles of all mechanism; the laws of motion and force; steam; electricity; magnetism, &c., illustrated by apparatus.

Agricultural Engineering and Mechanics.—The methods and materials used in construction; what is good material, and what is good workmanship.

Implements and Machinery.—The principles involved; parts liable to wear or break; adjustment; care; repair; specimens in the museum; mills.

Drawing.—Of plans, implements, animals, maps, machinery, &c.

Conveyancing.—Forms; titles; procedures, &c.

Language and Literature.—Comparisons of styles of expression; speaking to an audience; writing for the press; criticisms.

Principles of Government.—American institutions; comparison with others; duties of township and county officers; laws of vicinage, &c.

Accounts generally, and farm accounts specially; formation of methodical habits by daily practice at the institution.

Farm Economy.—Expenditures and returns; determination of the most economical mode of accomplishing given jobs of work.

Hydraulics.—Methods of supplying water where wanted, and of preventing injury by excess; machines; pipes.

Drainage.—Its effects on soils; methods of effecting it.

Agricultural Chemistry.—Practical analysis of manures, soils, plants, &c., their elements; chemical agents and apparatus.

Geology.—The crust of the earth; soils of all kinds; how formed; specimens in the museum.

Geography.—Features of the earth's surface, position of places, maps, productions and peculiarities of different regions.

Astronomy.—Motions and influences of the heavenly bodies, revolutions, seasons, climates.

Meteorology.—Atmospheric influences; electric and magnetic agencies; heat; cold; moisture; drought; winds; storms; shelter; counteraction; instruments; observations; deductions.

Mineralogy.—Identification of rare or valuable minerals; gypsum, lime, phosphate of lime, cement lime, magnesia; coals, &c.; specimens in the museum.

Botany.—Arrangement of plants in families; names of individual species and parts of plants; plants of other countries in museum.

Vegetable Physiology.—The structure of the vegetable body, functions of roots, leaves, stem, bark, sap, &c.; growth of plants; diseases.

Animal Physiology.—The structure of the animal body; composition, form and functions of its parts; nourishment; growth.

Health.—Laws of health; effects of exposure to which farmers are liable; prevention of disease.

Veterinary Practice.—Diseases of animals; injuries.

Entomology.—Habits of insects useful and injurious, especially those injurious to vegetation; specimens in the museum.

Breeds of Stock, Poultry, &c.—Their peculiarities; points, &c.; specimens.

Feeding.—Amount, quality and preparation of food; experiments; soiling.

Training of Animals.—Of horses, oxen, &c.

Culture of the Soil.—Varieties of soils and conditions; instruments and processes applicable to various soils, crops and seasons.

Manures.—Preparation and use of all home manures; experiments with foreign and artificial manures.

Produce.—Preservation and marketing of grain, meat, fruits, roots, &c.

Agricultural History.—Condition in different nations, and at different periods; causes of improvement.

Horticulture.—The garden; the orchard; the nursery; the yard; pruning, training, grafting, &c.; best shrubs, trees, flowers, fruits, vegetables; peculiarities of varieties as to habits and culture; decoration and love of home.

Experiments with manures, processes, seeds, &c., systematic trial; record; publication of results.

Malpractice.—What to avoid doing; exposure of proved errors; trial of supposed errors.